

# Blue Grass *exchange*

A Partnership for Safe Chemical Weapons Destruction

## Kentucky's Review and Oversight Team Assembled for Project

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## Winter 2005

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Blue Grass Chemical Agent-  
Destruction Pilot Plant

[www.pmacwa.army.mil](http://www.pmacwa.army.mil)

## Richmond Mayor Gets In-the-Igloo View



When Richmond Mayor Connie Lawson expressed interest in seeing the inside of an igloo containing agent-filled munitions, Lt. Col. George B. Shuplinkov agreed—as long as the mayor followed all safety guidelines and wore proper protective clothing. The mayor complied, and Shuplinkov, commander of the Blue Grass Chemical Activity, provided a briefing and a tour not available to the average citizen.

Mayor Lawson said she was happy to represent her constituents on this visit to an ultra-secure part of Blue Grass Army Depot. “I sincerely appreciate the efforts of Lt. Col. Shuplinkov and the outstanding staff at the depot in overseeing the safety of the munitions. Our community and region are well protected by these excellent individuals,” she said.

U.S. Army Photo by Richard Sloan

# Kentucky's Review and Oversight Team Assembled for Project

By SHANNON POWERS, Kentucky Department for Environmental Protection, BGAD Project Coordinator

The Kentucky Environmental and Public Protection Cabinet, Kentucky Department for Environmental Protection (KDEP), Division of Waste Management, has assembled its team for the Blue Grass Chemical Agent-Destruction Pilot Plant. The team reviews, amends, and has approval authority for permit applications and oversees construction and operations of the demilitarization facility to ensure compliance and protection of human health and the environment. The team officially came together in mid-August and consists of two engineers, a geologist, an inspector, and a program coordinator.

One of the engineers, John Jump, will serve as project manager. He is a licensed professional engineer and comes from the KDEP Division for Air Quality, where he supervised the Chemical Section in the Permit Review Branch for one and a half years. Beginning in 1998, Jump reviewed applications and wrote permits in the Chemical Section. He is a graduate of the University of Kentucky, where he earned his bachelor's degree in materials engineering, and he taught there as an assistant while researching flaw detection in composite plates.

The second engineer is Eric Ringo. Ringo graduated from the University of Kentucky in 1983 with a bachelor's degree in mechanical engineering. After graduation, Ringo worked for Kentucky Utilities at the E.W. Brown Electric Generating Station. He later spent 17 years at the Jim Beam Brands Distilling Company where he was plant engineer and a member of the team responsible for environmental permitting and compliance. Ringo joined the KDEP Division of Waste Management in August 2003 where he has been working in the Permit Review Section of the Hazardous Waste Branch.



Photo by Sandra Plant

Left to right: Tim Thomas, deputy commissioner of KDEP; team members Bill Buchanan, Shannon Powers and Tim Barrett; Kay Harker, KDEP representative on the Citizens' Advisory Commission; and team members John Jump and Eric Ringo.

Geologist Tim Barrett comes to KDEP's Blue Grass project team from the Petroleum Storage Tank Environmental Assurance Fund, where he was the director of the fund's Technical Operations Division. Before that, Barrett worked 10 years as an environmental consultant and project manager at Commonwealth Technology, Inc., and Spade Corp. Barrett is a major in the Kentucky Army National Guard, and his specialty areas include chemical warfare and artillery. He is presently assigned to the Kentucky Joint Forces Command working on environmental affairs. Barrett is a graduate of Edinboro University of Pennsylvania where he

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Photos by Diane Osbourne

In this photo montage Al Peter, Bechtel Parsons Blue Grass Construction Safety Supervisor, (left) with a team from GRW, Inc. (Jay Abbey, center, Barry Zulauf, right), surveys the future site of the Blue Grass Chemical Agent-Destruction Pilot Plant.

## Safety First as Site Work Begins

The first step toward construction of the Blue Grass Chemical Agent-Destruction Pilot Plant is under way, and that first step involves safety. A safety survey began in October at the future site of the BGCAPP on the Blue Grass Army Depot. The survey is designed to identify any potential hazards at the site before construction begins, protecting the construction workforce and preventing delays from unknowns once construction begins.

"The key to safety is planning your work and working your plan," said Jim Goumas, safety manager for Bechtel Parsons Blue Grass.

With that goal in mind, "We first walked every foot of the site so that we know everything that is

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## Quarterly Update from Site Manager and Project Manager

By JIM FRITSCHÉ, Blue Grass Chemical Agent-Destruction Pilot Plant Site Manager, and CHRIS MIDGETT, Bechtel Parsons Blue Grass Project Manager

We are writing this update to the community as a team because we are of one mind on the commitment and dedication needed to safely complete this vital project. We are keenly aware that the best efforts of both the systems contractor and the government are essential to ensure maximum protection of the worker, the environment and the community.

### Safety

The project continues to work injury-free with not even a first-aid event. We are in our 18<sup>th</sup> month now, and we have logged 539 safe work days. A recent 30 percent review of the design was well done and the emphasis on safety was very apparent.

### Teamwork

Together the two of us have years of experience with chemical weapons demilitarization, and we are proud of this project and the team that is coming together to get this job done. With the addition of new members, the Blue Grass team becomes stronger both professionally and personally. Some talented and cooperative people are mixing well with the team that is already established.

On the regulatory side, the Kentucky Department for Environmental Protection (KDEP) has filled key positions and is working steadily on the Research, Development and Demonstration permit application. We will be submitting a revised permit application to KDEP in response to their request for more information. The systems contractor (Bechtel Parsons Blue Grass), the government and the regulatory agencies are in constant communication with each other, and communications improve with each passing week.

Things are going well at the Blue Grass Chemical Activity, and the new commander, Lt. Col. George Shuplinkov, has proven to be a leader and a team player. Col. Martin Jacoby, commander of Blue Grass Army Depot, brings experienced leadership and continuity to the team. We are all working together to make this project successful. The Corps of

Engineers has two new engineers. FOCIS Associates, a government subcontractor that works out of the Richmond office, advises both the site manager and the project office. We both live in Madison County and are pleased when those of you in the community seek us out to ask questions or to give us your ideas. Lately many of you have asked us about project funding and schedule. We wanted to take this opportunity to answer your questions with the information currently available.

### Funding

All of us know that the resources of the federal government are constrained and must be allocated among many important areas. We will not know what our funding levels are for the coming years until the president's budget is announced in early 2005 and approved by Congress. But be assured, whatever resources we have, our priority is still safety. Nothing will be done at the expense of safety. If we end up with reduced funding, we will continue the design review, evaluate current plans, and develop options that allow us to improve efficiency and reduce costs with no reduction in our commitment to safety. You should also rest assured that the United States is committed to completing this project and safely destroying these weapons—in accordance with public laws and the Chemical Weapons Convention treaty.

### Schedule

Some of you may be aware that a stop work order on process design was issued at our sister site in Pueblo, Colo. (See Citizen Exchange on page 7.) This action could potentially delay the Blue Grass facility because we were using data from the Pueblo design in our own design effort. (For example, both sites have mustard agent stored in projectiles. The design for the Pueblo projectiles applies to the projectiles here in



Chris Midgett, left, and Jim Fritsche

Photo by Sandra Plant

Richmond.) We are still assessing the impact the stop work order will have on our schedule. Once the government and systems contractor are sure of the facts, we will notify the public through the Kentucky Chemical Destruction Community Advisory Board and through our outreach program.

The intermediate design for the munitions demilitarization building (MDB) should be 60 percent complete by February 2005. We plan to start early infrastructure construction work in Spring 2005, and we anticipate that main plant construction will start in late 2005, including the MDB.

We hope this joint message has provided useful information to you. If you like this approach, we will share information in this way in the next issue.

### Economic Impact of BGCAPP



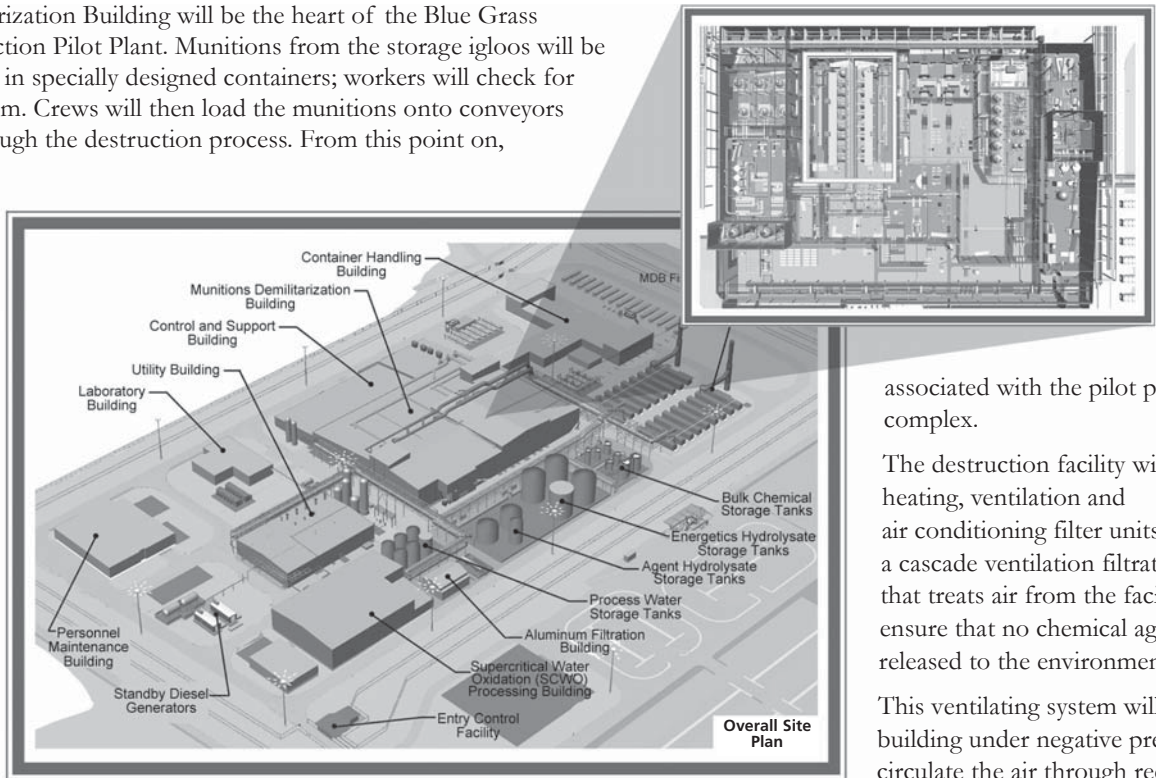
\$1,640,815	Small businesses
\$354,581	Large businesses
<b>\$1,995,396</b>	<b>Total dollars spent to date</b>

\$225,939	Small disadvantaged
\$266,216	Woman-owned
\$88,520	Veteran-owned
\$418,345	Local

# Munitions Demilitarization Building Will Be Major Structure in Chemical Weapons Destruction Process

The Munitions Demilitarization Building will be the heart of the Blue Grass Chemical Agent-Destruction Pilot Plant. Munitions from the storage igloos will be delivered to the building in specially designed containers; workers will check for leaks before opening them. Crews will then load the munitions onto conveyors that will carry them through the destruction process. From this point on, workers will manage the destruction process using advanced robotics, computer technology and video monitoring equipment. Robotic equipment will drain the liquid chemical agent from the munitions and separate the energetics from the munitions. Once dismantled and drained, the munition parts will travel to different types of equipment where the chemical agent and energetic material will be neutralized.

The building will be approximately 100,000 square feet and contain 490 pieces of equipment. The construction will require 8,000 cubic yards of excavation and backfill, over 12,000 cubic yards of concrete, 1,500 tons of structural steel and over 100,000 feet (19 miles) of pipe. The building represents about half of the total construction work



associated with the pilot plant complex.

The destruction facility will use heating, ventilation and air conditioning filter units to maintain a cascade ventilation filtration system that treats air from the facility to ensure that no chemical agent is released to the environment.

This ventilating system will keep the building under negative pressure and circulate the air through redundant filters to protect workers, the public

and the environment. This negative pressure system will guarantee both clean air for the workers and containment of chemical agent.

## Depot Submits Clean Air Act Permit Application for BGCAPP

The Blue Grass Army Depot submitted an air permit application recently to the Kentucky Department for Environmental Protection (KDEP) for the Blue Grass Chemical Agent-Destruction Pilot Plant (BGCAPP). The depot requested a separate, stand-alone construction and Clean Air Act, Title Five, operating permit for the facility, which will be constructed and operated by Bechtel Parsons Blue Grass.

“The stand-alone permit will enable more effective management of the monitoring, recordkeeping and reporting activities for the BGCAPP air emissions sources,” said Col. Martin Jacoby, depot commander, in a letter to KDEP’s Division for Air Quality.

The BGCAPP facility will have the following significant air emissions sources:

- In the munitions demilitarization building, all emissions pass through the building’s heating, ventilation and air conditioning filter system, which filters any gas effluents before the air is released to the environment.
- Four boilers use number two fuel oil as a backup fuel if the natural gas supply is interrupted.
- Six emergency generators with diesel-cycle internal combustion engines will be used only during power failures to maintain critical operations and safety systems.

A seventh emergency generator with an internal combustion engine is an “insignificant activity,” as defined by Kentucky Administrative Regulations. The remaining air emission sources are also described by the depot as insignificant activities.

The 1990 Clean Air Act is a federal law covering the entire country through which the U.S. Environmental Protection Agency (EPA) sets limits on how much of a pollutant can be in the air anywhere in the United States. This ensures that all U.S. citizens have the same basic health and environmental protections. However, the law recognizes that it makes

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## Project *News Briefs*

### Quarterly Meetings of Advisory Boards

Advisory board members and local residents should mark their calendars for Feb. 15, 2005, when the Chemical Destruction Community Advisory Board (CDCAB) will meet from 1 – 5 p.m. at the Perkins Building on the Eastern Kentucky University campus.

One of the planned agenda items is a presentation on the design of the Blue Grass Chemical Agent-Destruction Pilot Plant by Chris Haynes, the Bechtel Parsons Blue Grass design-build manager.

According to Doug Hindman, co-chair of the Kentucky Chemical Demilitarization Citizens' Advisory Commission (CAC), the commission is also likely to meet on Feb. 15 at 5:30 p.m. following the board meeting. At both meetings the public will have opportunities to make comments and ask questions.

For more information on the CDCAB, log on to [www.pmacwa.army.mil](http://www.pmacwa.army.mil). Or call the Blue Grass Chemical Stockpile Outreach Office at (859) 626-8944.

For more information on the CAC, contact Valerie Merlin, CAC secretary, at (859) 625-1528.

### How to Request a Speaker

To schedule a speaker for a college or high school class, a civic or service organization, church group or local special interest organization, contact the Blue Grass Chemical Stockpile Outreach Office at (859) 626-8944. Speakers are available from the Blue Grass Army Depot, the Blue Grass Chemical Activity, the Program Manager Assembled Chemical Weapons Alternatives or any of the teaming partners of Bechtel Parsons Blue Grass.

Blue Grass Project speakers have made presentations to more than 18 groups, school classes, and organizations since September 2004. A few examples include a general project overview for the Berea Woman's Club by Jim Fritsche, site project manager, and a presentation on the supercritical water oxidation (SCWO) process for engineering

students at both the University of Kentucky and the University of Louisville by Kevin Downey, the SCWO task lead for project partner General Atomics.

Mickey Morales, Bechtel Parsons Blue Grass public involvement manager, and Dave Smith, chief scientist, Bechtel Parsons Blue Grass, spoke to a chemistry class at Madison Central High School. Morales shared project history and general information with the students. Smith, a Ph.D. chemist, was asked to discuss the chemical structure of mustard agent and sarin.

### Statewide Award for Bechtel Parsons Co-Op Student

Congratulations to Brooke Ratliff, recipient of the Ken Noah Award through the Kentucky Association of Cooperative Education and Career Employment. The award recognizes co-op students who make significant contributions to their employer and receive outstanding performance evaluations during their co-op experience. Ratliff is an administrative



Left to right: Diane Claybaugh, Bechtel Parsons project administrator; Brooke Ratliff, Bechtel Parsons Blue Grass administrative services specialist; and Connie Dirks, career counselor, Office of Cooperative Education, Eastern Kentucky University.

services specialist for Bechtel Parsons Blue Grass. She was nominated by her supervisor, Diane Claybaugh, project administrator, through the Eastern Kentucky University Cooperative Education Office. She competed with students from colleges and universities across the state of Kentucky. Ratliff will graduate from Eastern Kentucky University in May 2005 with a degree in communications.

### Welcome to Another Local Hire

Scott Luna, an environmental engineer, has joined the growing number of area residents working on the Blue Grass Project. Luna has been hired to work with the environmental team. He lives in Lawrenceburg and is married with two daughters, ages 5 months and 2 years. He was previously employed with Shield Environmental in Lexington.

### Revised Permit Application Available

The Blue Grass Army Depot submitted to the Kentucky Department for Environmental Protection (KDEP), Division of Waste Management, the response to the Research Development & Demonstration (RD&D) Permit Application Notice of Deficiency (NOD). The depot also submitted Revision 2 of the RD&D Permit Application to KDEP. Revision 2 incorporates the changes to the RD&D Permit Application that are identified in the NOD response.

The permit application is for the construction and testing of a full-scale chemical munitions destruction facility to be located on the depot. Research will be conducted using chemical neutralization and water-based oxidative processes to destroy a portion of the chemical weapons stockpile stored at the depot. Copies of the revised permit application are available for public inspection and review at the following information repositories:

- Blue Grass Chemical Stockpile Outreach Office
- Richmond Public Library
- Berea Public Library
- Eastern Kentucky University Library
- Berea College Library
- Kentucky Environmental and Public Protection Cabinet

Anyone wishing to submit a comment, needing additional information or wanting to be added to the facility mailing list should contact Michael V. Welch of KDEP's Division of Waste Management at (502) 564-3350 or [environment@ky.gov](mailto:environment@ky.gov).

Copies of the application are available on CD-ROM by contacting the Blue Grass Chemical Stockpile Outreach Office at (859) 626-8944 or [outreach@bechtel.com](mailto:outreach@bechtel.com).

## Citizens Advisory Board and Commission Discuss Project

By KENT CLARK, Madison County Judge Executive, CDCAB co-chair; CRAIG WILLIAMS, director, Chemical Weapons Working Group, CDCAB co-chair; and DOUG HINDMAN, chair, Kentucky Chemical Demilitarization Citizens' Advisory Commission

On Oct. 4 the Kentucky Chemical Destruction Community Advisory Board (CDCAB) and the Kentucky Chemical Demilitarization Citizens' Advisory Commission (CAC) met at the Perkins Building on the campus of Eastern Kentucky University.

At the CDCAB meeting, Lt. Col. George Shuplinkov, commander of the Blue Grass Chemical Activity, presented a detailed view of the upcoming procedure for changing out the plugs on the one-ton container of chemical agent stored at the depot. Shuplinkov explained that corrosion of the existing plugs required that they be replaced to ensure the container does not leak while in storage. A copy of the plan is available for public review at the Blue Grass Chemical Stockpile Outreach Office.

Bill Pehlivanian, the deputy program manager for the Assembled Chemical Weapons Alternatives (ACWA) program, provided an update on the funding situation surrounding the national demilitarization effort and the ACWA program, which oversees the Kentucky and Colorado projects. Earlier this year it was announced that 2005 funding for Colorado's project was severely cut, and official memos circulated to the CDCAB members indicated that future budget cuts may impact the Kentucky project as well.

It was proposed, and adopted by consensus, that a letter be sent to Kentucky state and federal officials requesting that they communicate to the Pentagon the CDCAB's uneasiness about any future budget cuts that might slow progress at the Blue Grass site. (At the CAC meeting immediately following, the Governor's commission endorsed the CDCAB actions and sent a letter to the same recipients. Copies of both letters can be obtained by contacting the CAC at [kycac@iclub.org](mailto:kycac@iclub.org).)

ACWA Site Manager Jim Fritsche and Bechtel Parsons Blue Grass Project Manager Chris Midgett then provided updates. The environ-



Photo by Diane Osbourne

Left to right: Kim Irwin, Bechtel Parsons Blue Grass; John Jump, KDEP Division of Waste Management; Tim Thomas, Kentucky Department for Environmental Protection; Doug Hindman, CAC representative; Lt. Col. George Shuplinkov, Blue Grass Chemical Activity; Robert Bagby, civic representative; and Mary Kemper, Berea Hospital. Only Hindman, Bagby and Kemper are voting members of the board.

mental permit needed to build and operate the disposal facility has been submitted to the Kentucky Department for Environmental Protection for review; initial designs for the plant have been submitted and accepted by the government; and early construction (i.e., access road, administration building and main site preparation) is scheduled to begin in early 2005.

Tim Thomas, deputy commissioner for Kentucky Department of Environmental Protection, updated the audience on the status of the permit, currently under review in Frankfort.

Last year, legislation was passed directing the Army to upgrade the chemical agent monitoring system at the Blue Grass Army Depot. Greg St. Pierre, director of risk management for the Army's Chemical Materials Agency, reported the status of the process to achieve that directive.

Carl Richards, director of the Madison County Emergency Management Agency and Chemical Stockpile Emergency Preparedness Program, also provided an update on the notable progress made in overall community

preparedness. Richards noted that local citizens had an extremely low awareness concerning which emergency response zone they reside in.

CDCAB subcommittees examining environmental permitting and secondary waste presented briefings and recommendations regarding both areas.

The meeting concluded with discussion, finalization and acceptance of the CDCAB Mission Statement and Governing Procedures. The next meeting date was tentatively set for Feb. 15, 2005. (The Mission Statement and Governing Procedures and meeting notes can be seen at <http://www.pmacwa.army.mil/ky/publicinvolvement.htm>.)

The CAC meeting that followed endorsed the actions of the CDCAB regarding funding, and with regret, accepted the resignation of Worley Johnson, who had served as co-chair for almost a decade. The CAC also requested nominations to replace Johnson.

The CDCAB and CAC invite the public to participate in upcoming meetings to stay informed about this important project impacting Central Kentucky.

## Citizen Exchange

Citizen Exchange focuses on questions frequently asked by members of the community. If you have a question you would like to have answered in this section, please send it to Editor, Blue Grass Exchange, ATTN: Bechtel Parsons Blue Grass, 301 Highland Park Drive, Richmond, KY 40475. You may also send questions via e-mail to [outreach@bechtel.com](mailto:outreach@bechtel.com). We hope you find this section informative and useful in understanding the efforts to safely destroy the chemical weapons at the Blue Grass Army Depot.

### **I understand that the sarin-filled rockets present the greatest risk because of the possibility of auto ignition. Aren't these weapons stored in protective bunkers making this issue moot?**

All M55 rockets are stored in secure, earthen bunkers commonly called "igloos." However, it is possible—though highly unlikely—for one rocket to auto-ignite, leading to multiple ignitions in a domino-like effect. Enough detonations within the igloo could breach the igloo wall, and subsequent ignitions could result in an egress from the igloo and a potential pathway off the depot into the local community.

While in storage, M55 rockets are oriented so that they point to the rear of their storage igloo for safety. Studies show that auto-ignition of an M55 rocket has an extremely low probability of occurrence ( $<2 \times 10^{-15}$ ) and is only a minor component of the risk associated with continued stockpile storage. Still, the rockets are the largest contributor to storage risk because of their overall assembly and their susceptibility to accidental ignition through external events such as lightning strikes, earthquakes and airplane crashes.

### **How does the Army find leakers and what does it do once they're found?**

The Army instituted the stockpile storage

monitoring inspection program for early detection of agent leakage. The program requires periodic sampling of the air inside the shipping and firing tubes that hold the rocket in storage, and the Army randomly samples GB M55 rockets from each munition lot at each storage site. If a leaker is detected, the rocket is identified, removed from the general stockpile, and overpacked in a steel container specifically designed for packaging leaking M55 rockets. Leakers are then stored under the same security conditions in earthen igloos at the depot, but separate from general storage.

### **I read in the newspaper that a stop work order was issued for the Blue Grass sister site in Colorado. Is this true?**

Design work on the Pueblo Chemical Agent-Destruction Pilot Plant's processing buildings will cease for approximately 9 months while the project team conducts trade studies to examine design alternatives that could reduce project costs. "Processing" refers to those areas of the plant where the weapons energetics materials and chemical agent are accessed, removed and neutralized.

For the past several months, the Department of Defense has been evaluating options to reduce the costs for the Pueblo plant. With safety being the top priority, evaluations are

focused on optimizing cost and schedule and are looking at ways to build a smaller plant with fewer operating personnel than the facility currently being designed. There will be no changes to the selected destruction technology—neutralization followed by biotreatment.

Early construction activities not involving the process buildings will continue while the trade studies are underway. This construction includes access roads, access control building, office buildings and some non-process support facilities.

### **How will the above affect the Blue Grass project?**

The suspension of the process design effort at Pueblo could increase the cost and schedule for the Blue Grass project. Certain process design elements from Pueblo were scheduled to be used in Blue Grass as a cost savings measure. The suspended work at Pueblo will mean that Blue Grass design work will now have to be done by Blue Grass staff. It is still too early to tell what the quantified impact will be. The Assistant to the Secretary of Defense has stated that "we are committed to fully funding the life cycle" of the project. While funding realignments may be necessary in the near term to address emergent issues, this process is not expected to hinder progress at Blue Grass.

## Clean Air Act Permit Application continued from page 4

sense for states to take the lead in carrying out the Clean Air Act, because pollution control problems often require special understanding of local industries, geography, housing patterns, etc. Therefore, the Commonwealth of Kentucky does much of the work to enforce the Clean Air Act within the state, allowing the Commonwealth to have stronger pollution controls than other states might have.

KDEP's Division for Air Quality is the state agency primarily responsible for enforcing state and federal air quality standards in Kentucky. KDEP will issue a permit for the BGCAPP that will provide information on which pollutants are being released; how

much of each pollutant may be released; and the steps the depot and the operator are taking to reduce pollution, including plans to monitor (measure) pollutant releases.

More information on the Clean Air Act is available on the Internet at <http://www.epa.gov/cbtpages/air.html> or <http://www.air.ky.gov/>.

A copy of the BGCAPP permit application is available for public review at the Blue Grass Chemical Stockpile Outreach Office, 301 Highland Park Drive in Richmond and at the KDEP Division of Air Quality, 803 Schenkel Lane, Frankfort.





## Team Assembled for Project

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earned a degree in geology, and he has been a registered professional geologist since 1993.

Inspector Bill Buchanan, Jr., a registered industrial hygienist, comes to the project from Mountain Environmental Services, Inc., where he served as the corporate health and safety specialist for the past two years. Earlier he served as a technical oversight and environmental scientist for the U.S. Department of Energy's Savannah River Site in Aiken, S.C. Buchanan has broad experience in inspection, sampling, risk assessment, and project oversight. He earned a bachelor's degree in environmental health science from Eastern Kentucky University and is pursuing a master's degree in public health from ECU.

Shannon Powers, the project coordinator, comes to the project from the Kentucky Division of Emergency Management, where she was the Chemical Stockpile Emergency Preparedness Program (CSEPP) public information officer for three years. Before that, Powers was a teaching assistant at Western Kentucky University, the assistant editor for *The Ohio County Times-News*, and a production assistant/researcher for Peridot Pictures. Powers is a graduate of Western Kentucky University, where she earned her bachelor's in mass communication and English and her master's in English.

## Safety First

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possible about the site," stated Otis Drinkard, construction project superintendent.

The site safety survey covers 9 of the 120 acres marked for construction. The access road and main facilities will be located within these 9 acres.

Using surveying instruments, workers established boundaries and placed stakes in 100-foot by 250-foot increments across the site. The stakes create a grid, from which vegetation will be cleared in 7-foot swipes.

After vegetation is removed, workers will use metal detectors to search the cleared area for metal anomalies such as buried pipes, debris, or scrap. Identifying and either marking or removing these anomalies prevents workers from encountering them unexpectedly during the next construction phase, which could cause injuries or create delays. Once it is certain that all anomalies have been located, the site will be acceptable for the next phase of site preparation, which includes clearing and grubbing (removing stumps, roots, etc.) and installing sediment and erosion control measures.



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